Attachment 'F' Rcvd. 12/20/88

FISHER-CALO CHEMICAL AND SOLVENTS CORP.
LAPORTE COUNTY, INDIANA

INTRODUCTION

This report is a documentation of the geology and an assessment of the potential for groundwater pollution at the Fisher-Calo facility in LaPorte County, Indiana. The facility is more specifically located two miles southeast of Kingsbury in the southern part of Section 5 and the northern part of Section 8, T35N, R2W. The plant has been inactive since March of 1978 when a fire caused extensive damage. While operative, the facility's function was waste solvent recovery and temporary storage of various wastes and still bottoms. Since operations have ceased, large quantities of waste (much of it toxic) have been left at the site and many containers are beginning to deteriorate and leak.

GEOLOGY

The unconsolidated materials above the bedrock are approximately 200 feet thick and are divided into two major units. The unit at the surface consists of stratified outwash-plain (glaciofluvial) medium to coarse sand with some clay, silt and pebbles. This unit is classified within the Atherton formation. In the site area this zone is from 60 to 70 feet thick and is capped by one to eight feet of sandy clay and top soil.

The unit resting upon the bedrock surface is a silty, sandy, pebbly clay till containing thin, discontinuous zones of sand and gravel. The till is from 130 to 140 feet thick.

The site lies on an east-west trending bedrock contact of the Devonian-Mississippian Ellsworth Shale (to the north) and the Upper Devonian Antrim Shale (south). The bedrock dips northwestward. It is thought at the present time that the bedrock exerts little influence on the conclusions of this investigation.

SURFACE WATER

Drainage near the site is quite variable but is generally to the south and west. The closest legal drain is Travis Ditch, a southward flowing intermittent swale located one-quarter mile southwest of the site. The major perennial surface-drainage system in the area appears to be Kingsbury Creek, which flows southeastward about one-half mile southwest of the property.

GROUNDWATER

Groundwater use near the site is moderate, although numerous test wells have been drilled on and around the property in the past 35 years. Local supply wells range from 45 to 90 feet in depth but are commonly 70 to 75 feet deep in the immediate vicinity of the property.

The outwash unit near the surface is the principal aquifer in the area. It is an unconfined groundwater system with a water table 18 to 20 feet below the ground surface. The hydraulic gradient is southwesterly toward Kingsbury Creek. The shallowness of the coarsely granular deposits indicates that this area may be a site of extensive groundwater recharge by the direct infiltration of precipitation. This further suggests the existence of a strong vertical component to groundwater flow. The hydraulic characteristics of the aquifer are as follows: Avgrage hydraulic conductivity--2.8×10^{-2} cm/sec; transmissivity--39 cm^2/sec (based on an approximate saturated thickness of 45 feet); and a storage coefficient of 0.12 indicative of unconfined conditions.

The lower till unit has a vertical conductivity of about 1.4×10^{-7} cm/sec. It is primarily a nonwater-producing aquitard.

CONCLUSIONS AND RECOMMENDATIONS

The geologic conditions at the Fisher-Calo facility indicate that a severe threat of groundwater pollution exists. The endangered aquifer is the principal water source in the area. The presumed presence of a strong downward flow component suggests that pollutants may be carried to considerable depths within the aquifer before lateral migration becomes dominant.

There is presently a lack of data confirming the occurrence of groundwater pollution. I recommend that monitoring wells be installed at staggered depths on the western and southern sides of the site. Several wells should also be placed northeast of the operation for background surveillance. More detailed specifications will be outlined if such a course of action is adopted by the Indiana State Board of Health.

As an added precaution, I suggested that the Midwest Chlorine and Midwest Ammonia plants north of the Fisher-Calo site be included in any water-quality surveillance effort. These firms produce sodium hypochlorite and also distribute chlorine, ammonia, and sulfur dioxide to commercial consumers. If proper precautions are not employed, this plant may also be posing a threat to local groundwater resources.

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cgpM/5 12/18/78